Chapter 1

Command-Line Interface Overview

The *command-line interface (CLI)* is the interface to the software that you use whenever you access the router—whether from the console or through a remote network connection. The CLI, which automatically starts after the router finishes booting, provides commands that you use to perform various tasks, including configuring the JUNOS software and monitoring and troubleshooting the software, network connectivity, and the router hardware.

The CLI is a straightforward command interface. You type commands on a single line, and the commands are executed when you press the Enter key. The CLI provides command help and command completion, and it also provides Emacs-style keyboard sequences that allow you to move around on a command line and scroll through a buffer that contains recently executed commands.

The CLI is indicated by the presence of the > prompt, which is preceded by a string that defaults to the name of the user and the name of the router. For example:

```
user@host>
```

CLI Modes

The CLI has two modes: operational and configuration. In operational mode, you monitor and troubleshoot the software, network connectivity, and the router by entering CLI commands.

You configure the JUNOS software by entering a configuration mode and creating a hierarchy of configuration statements. For additional information about configuring the router, see the *JUNOS Internet Software Configuration Guide: Getting Started*.

You monitor and troubleshoot the router by using the operational mode commands described in this manual.

This chapter discusses the operational CLI commands, including the following topics:

CLI Command Hierarchy on page 4

CLI Operational Commands on page 5

Use the CLI on page 6

Control the CLI Environment on page 16

Set the Current Date and Time on page 18

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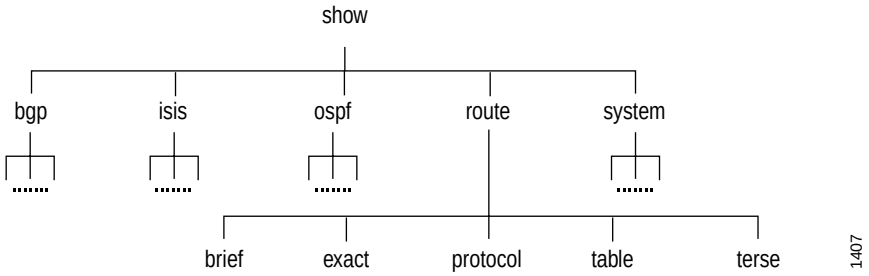
CLI Command Hierarchy

The CLI commands are organized in a hierarchical fashion, with commands that perform a similar function being grouped together under the same level. For example, all commands that display information about the system and the system software are grouped under the show command, and all commands that display information about the routing table are grouped under the show route command. Figure 1 illustrates a portion of the show command hierarchy.

Figure 1: CLI Command Hierarchy Example



To execute a command, enter the full command name, starting at the top level of the hierarchy. For example, to display a brief view of the routes in the router table, use the command show route brief.

The hierarchical organization results in commands that have a regular syntax and provides several features that simplify use of the CLI:

Consistent command names—Commands that provide the same type of function have the same name, regardless of the portion of the software they are operating on. For example, all show commands display software information and statistics, and all clear commands erase various types of system information.

Lists and short descriptions of available commands—Information about available commands is provided at each level of the CLI command hierarchy. If you type a question mark (?) at any level, you see a list of the available commands along with a short description of each command. This means that if you already are familiar with the JUNOS software or with other routing software, you can use many of the CLI commands without consulting the documentation.

Command completion—Command completion for command names (keywords) and for command options is available at each level of the hierarchy. If you type a partial command name followed immediately by a question mark (with no intervening space), you see a list of commands that match the partial name you typed.

CLI Operational Commands

When you first log into the router and the CLI starts, you are in CLI operational mode. At this level, there are several broad groups of CLI commands:

Commands for controlling the CLI environment—The commands in the set hierarchy configure the CLI display screen. For information about these commands, see “Control the CLI Environment” on page 16.

Monitoring and troubleshooting commands—The following commands let you display information and statistics about the software running on the router, such as routing table entries, and test network connectivity. Using these commands is discussed in various places in this manual.

clear—Clear protocol database information.

monitor—Perform real-time debugging of various software components, including the routing protocols and interfaces.

ping—Determine the reachability of a remote network host.

show—Display the configuration currently running on the router, and display information about the system, including interfaces, routing protocols, routing tables, routing policy filters, and the chassis.

test —Test the configuration and application of policy filters and AS path regular expressions.

traceroute—Trace the route to a remote network host.

Commands for connecting to other network systems—The ssh command allows you to open secure shell connections and the telnet command allows you to open telnet sessions to other hosts on the network. For information about these commands, see “Monitor and Perform System Management Functions” on page 41.

Commands for copying files—The file and copy commands allow you to copy files from one location on the router to another, from the router to a remote system, or from a remote system to the router. For information about these commands, see “Monitor and Perform System Management Functions” on page 41.

Commands for restarting software processes—The commands in the restart hierarchy allow you to restart the various JUNOS software processes, including the routing protocol, interface, SNMP, and SNMP MIB II processes. For information about these commands, see the *JUNOS Internet Softw are Configur ation Guide: Getting St arted* and the *JUNOS Internet Softw are Configur ation Guide: Netw ork Management*.

A command—request—for performing system-level operations, including stopping and rebooting the router and loading JUNOS software images. For information about this command, see “Monitor and Perform System Management Functions” on page 41.

A command—start—to exit from the CLI and start a UNIX shell. For information about this command, see “Monitor and Perform System Management Functions” on page 41.

A command—configure—for entering configuration mode, which provides a series of commands that let you configure the JUNOS software, including the routing protocols, interfaces, network management, and user access. For information about the CLI configuration commands, see the *JUNOS Internet Software Configuration Guide: Getting Started*.

A command—quit—for exiting from the CLI. For information about this command, see "Monitor and Perform System Management Functions" on page 41.

Use the CLI

This section describes how to use the *JUNOS* software CLI. It discusses the following topics:

Get Help About Commands on page 6

Have the CLI Complete Commands on page 8

CLI Messages on page 9

Move Around and Edit the Command Line on page 10

Get Help About Commands

The CLI provides context-sensitive help at every level of the command hierarchy. The help information tells you which commands are available at the current level in the hierarchy and provides a brief description of each.

To get help while in the CLI, type ?. You do not need to press Enter after typing the question mark. What you see on the screen depends on when and where you type the question mark:

If you type the question mark at the command-line prompt, the CLI lists the available commands and options.

If you type the question mark after entering the complete name of a command or command option, the CLI lists the available commands and options, then redisplays the command names and options that you typed.

If you type the question mark in the middle of a command name, the CLI lists possible command completions that match the letters you have entered so far, then redisplays the letters that you typed.

Examples: Get Help with Commands

In this example, all available commands are listed at the top level of the command hierarchy:

```
user@host> ?
Possible completions:
  clear          Clear information in the system
  configure      Manipulate software configuration information
  file           Perform file operations
  help           Provide help information
  monitor        Real-time debugging
  mtrace         Trace multicast path from a source to a receiver
  ping           Ping a remote target
  quit           Exit the management session
  request        Make system-level requests
  restart        Restart a software process
  set            Set CLI properties, date, time, craft display text
  show           Show information about the system
  ssh            Open a secure shell to another host
  start          Start a software process
  telnet         Telnet to another host
  test           Diagnostic debugging commands
  traceroute     Trace the route to a remote host
user@host>
```

List all commands that start with the letter c:

```
user@host> c?
Possible completions:
  clear          Clear information in the system
  configure      Manipulate software configuration information
user@host> c
```

List all available clear commands:

```
user@host> clear ?
Possible completions:
  arp            Clear address-resolution information
  bgp            Clear BGP information
  chassis        Clear chassis information
  firewall       Clear firewall counters
  igmp           Clear IGMP information
  interfaces     Clear interface information
  isis           Clear IS-IS information
  ldp            Clear LDP information
  log            Clear contents of a log file
  mpls           Clear MPLS information
  msdp           Clear MSDP information
  multicast      Clear Multicast information
  ospf           Clear OSPF information
  pim            Clear PIM information
  rip            Clear RIP information
  route          Clear routing table information
  rsvp           Clear RSVP information
  snmp           Clear SNMP information
  system         Clear system status
  vrrp           Clear VRRP statistics information
user@host> clear
```

Have the CLI Complete Commands

You do not always have to remember or type the full command or option name for the CLI to recognize it. To display all possible command or option completions, type the partial command followed immediately by a question mark.

To complete a command or option that you have partially typed, press Tab or the Space Bar. If the partially typed letters begin a string that uniquely identifies a command, the complete command name appears. Otherwise, a beep indicates that you have entered an ambiguous command, and the screen displays the possible completions.

Command completion also applies to others strings, such as filenames and usernames. To display all possible values, you can type a partial string followed immediately by a question mark. However, to complete these strings, press Tab; pressing the Space Bar does not work.

Examples: Use CLI Command Completion

Issue the show interface command:

```
user@host> sh<Space>ow i<Space>
'i' is ambiguous.
Possible completions:
  igmp        Show information about IGMP
  interface   Show interface information
  isis        Show information about IS-IS
user@host> show in<Space>terfaces <Enter>
Physical interface: at-0/1/0, Enabled, Physical link is Up
  Interface index: 11, SNMP ifIndex: 65
  Link-level type: ATM-PVC, MTU: 4482, Clocking: Internal, SONET mode
  Speed: OC12, Loopback: None, Payload scrambler: Enabled
  Device flags   : Present Running
  Link flags     : 0x01
...
user@host>
```

Display a list of all log files whose name starts with the string "messages," and then display the contents of one of the files:

```
user@myhost> show log mes?
Possible completions:
  <filename>          Log file to display
  messages            Size: 1417052, Last changed: Mar  3 00:33
  messages.0.gz       Size: 145575, Last changed: Mar  3 00:00
  messages.1.gz       Size: 134253, Last changed: Mar  2 23:00
  messages.10.gz      Size: 137022, Last changed: Mar  2 14:00
  messages.2.gr       Size: 137112, Last changed: Mar  2 22:00
  messages.3.gz       Size: 121633, Last changed: Mar  2 21:00
  messages.4.gz       Size: 135715, Last changed: Mar  2 20:00
  messages.5.gz       Size: 137504, Last changed: Mar  2 19:00
  messages.6.gz       Size: 134591, Last changed: Mar  2 18:00
  messages.7.gz       Size: 132670, Last changed: Mar  2 17:00
  messages.8.gz       Size: 136596, Last changed: Mar  2 16:00
  messages.9.gz       Size: 136210, Last changed: Mar  2 15:00
user@myhost> show log mes<Tab>sages.4<Tab>.gz<Enter>
Jan 15 21:00:00 myhost newsyslog[1381]: logfile turned over
...
```

CLI Messages

You see messages when you enter and exit from configuration mode, when you commit a configuration, and when you type a string or value that is not valid.

When you commit a configuration, the JUNOS software checks the configuration you are committing. If there are no problems, a message indicates that the configuration was accepted. If there are problems, a message indicates where the errors are.

In the top-level CLI commands and in configuration mode, if you type an invalid string—for example, the name of a command or statement that does not exist—you see the message syntax error or unknown command. A caret (^) indicates where the error is. Examples:

```
user@host> clear route
                      ^
syntax error, expecting <command>.

[edit]
user@host# telnet
          ^
unknown command.
```

When the number of choices is limited, the commands you can enter to correct the syntax error might be displayed. For example:

```
[edit]
user@host# load myconfig-file<Enter>
                ^
syntax error, expecting ‘merge’, ‘override’, or ‘replace’.
```

Move Around and Edit the Command Line

In the CLI, you can use keyboard sequences to move around on a command line and edit the command line. You can also use keyboard sequences to scroll through a list of recently executed commands. Table 2 lists the CLI keyboard sequences. They are the same as those used in Emacs.

Table 2: CLI Keyboard Sequences

Category	Action	Keyboard Sequence
Move the Cursor	Move the cursor back one character.	Ctrl-b
	Move the cursor back one word.	Esc-b or Alt-b
	Move the cursor forward one character.	Ctrl-f
	Move the cursor forward one word.	Esc-f or Alt-f
	Move the cursor to the beginning of the command line.	Ctrl-a
	Move the cursor to the end of the command line.	Ctrl-e
Delete Characters	Delete the character before the cursor.	Ctrl-h, Delete, or Backspace
	Delete the character at the cursor.	Ctrl-d
	Delete all characters from the cursor to the end of the command line.	Ctrl-k
	Delete all characters on the command line.	Ctrl-u or Ctrl-x
	Delete the word before the cursor.	Ctrl-w, Esc-Backspace, or Alt-Backspace
	Delete the word after the cursor.	Esc-d or Alt-d
Insert Recently Deleted Text	Insert the most recently deleted text at the cursor.	Ctrl-y
Redraw the Screen	Redraw the current line.	Ctrl-l
Display Previous Command Lines	Scroll backward through the list of recently executed commands.	Ctrl-p
	Scroll forward through the list of recently executed commands.	Ctrl-n
	Search the CLI history in reverse order for lines matching the search string.	Ctrl-r
	Search the CLI history by typing some text at the prompt, followed by the keyboard sequence. The CLI attempts to expand the text into the most recent word in the history for which the text is a prefix.	Esc-/
Repeat Keyboard Sequences	Specify the number of times to execute a keyboard sequence. *number* can be from 1 through 9.	Esc-*number sequence* or Alt-*number sequence*

How Output Appears on the Screen

When you issue commands in operational mode CLI, the output appears on the screen. If the output is longer than the screen, you can display it one screen at a time using a UNIX more-type interface.

You can also redirect the output through a UNIX-type pipe, either to apply simple filters to the output or to redirect the output to a file.

Display Output One Screen at a Time

If the output is longer than the screen, the ---More--- prompt indicates that more output is available. Table 3 describes how you can scroll at the ---More--- prompt. As soon as the CLI calculates how long the output is (usually by the second screen), the percentage of the command output already displayed appears next to the prompt.

Table 3: ---More--- Prompt Keyboard Sequences

Objective	Result	Keyboard Sequence
Get Help	Display help information about the keyboard sequences you can display at the ---More--- prompt.	h
Scroll Down	Scroll down one line.	Enter, Return, k, Ctrl-m, Ctrl-n, or down arrow
	Scroll down one-half screen.	Tab, d, Ctrl-d, or Ctrl-x
	Scroll down one whole screen.	Space or Ctrl-f
	Scroll down to the bottom of the output.	Ctrl-e or G
	Display the output all at once instead of one screen at a time. (Same as specifying the | no-more command after a pipe.)	N
Scroll Up	Display the previous line of output.	j, Ctrl-h, Ctrl-p, or up arrow
	Scroll up one-half screen.	u or Ctrl-u
	Scroll up one whole screen.	b or Ctrl-b
	Scroll up to the top of the output.	Ctrl-a or g
Search	Search forward for a string.	*/string*
	Search backward for a string.	*?string*
	Repeat the previous search for a string.	n
	Search for a text string. You are prompted for the string to match. (Same as specifying the | match *string* command.)	m or M
	Search, ignoring a text string. You are prompted for the string to not match. (Same as specifying the | except *string* command.)	e or E
Interrupt or End Output, Redraw the Output, and Save the Output to a File	Interrupt the display of output.	Ctrl-C, q, Q, or Ctrl-k
	Do not redisplay the CLI prompt immediately after displaying the output, but remain at the ---More--- prompt. (Same as specifying the | hold command.)	H
	Clear any match conditions and display the complete output.	c or C
	Redraw the output on the screen.	Ctrl-l
	Save the command output to a file. You are prompted for a filename. (Same as specifying the | save *filename* command.)	s or S

Filter Command Output

You can redirect the output of operational mode commands into a file or into filters. When you display help about these commands, one of the options listed is |, which is a pipe to redirect the output. For example:

```
user@host> show configuration ?
Possible completions:
  <[Enter]>  Execute this command
  |          Pipe through a command

user@host> show configuration | ?
Possible completions:
  count      Count occurrences
  except     Show only text that does not match a pattern
  find       Search for the first occurrence of a pattern
  hold       Hold text without exiting the ---More--- prompt
  match      Show only text that matches a pattern
  no-more    Don't paginate output
  resolve    Resolve IP addresses
  save       Save output text to a file
  trim       Trim specified number of columns from the start line
```

Place Command Output in a File

When the output is very long, when you need to store or analyze the output, or when you need to send the output in e-mail, you can redirect the output to a file. Doing this is useful when the output scrolls off the screen, making it difficult to cut the output from a window and paste it into another.

To save the output to a file, specify the save command after the pipe:

```
user@host> command | save filename
```

By default, the file is placed in your home directory on the router. For information about how you can specify the filename, see “How to Specify Filenames and URLs” on page 43.

This example stores the output of the request support information command in a file:

```
user@host> request support information | save filename
Wrote 1143 lines of output to 'filename'
user@host>
```

Search for a String in the Output

You can filter the output to search for a text matching a regular expression. You can match a regular expression, match everything except a regular expression, or find the first occurrence of text matching a regular expression. All searches are not case-sensitive.

To match a regular expression, specify the match command after the pipe:

user@host> *command* **| match** *regular-expression*

To ignore text that matches a regular expression, specify the except command after the pipe:

user@host> *command* **| except** *regular-expression*

If the *regular-expression* contains any spaces, operators, or wildcard characters, enclose it in quotation marks.

You use extended regular expressions to specify what text in the output to match. Command regular expressions implement the extended (modern) regular expressions as defined in POSIX 1003.2. Table 4 lists common regular expression operators.

Table 4: Common Regular Expression Operators

Operator	Match...
|	One of the two terms on either side of the pipe.
^	At the beginning of an expression, used to denote where the command begins, where there might be some ambiguity.
$	Character at the end of a command. Used to denote a command that must be matched exactly up to that point. For example, allow-commands "show interfaces $" means that the user cannot issue show interfaces detail or show interfaces extensive.
[ ]	Range of letters or digits. To separate the start and end of a range, use a hyphen (-).
( )	A group of commands, indicating an expression to be evaluated and the result is then evaluated as part of the overall expression.

For example, if a command produces the following output:

```
one two
two two
three two one
four
```

The match two command displays:

```
one two
two two
three two one
```

The except one command displays:

```
two two
four
```

List all the ATM interfaces in the configuration:

```
user@host> show configuration | match at-
    at-2/1/0 {
    at-2/1/1 {
    at-2/2/0 {
    at-5/2/0 {
    at-5/3/0 {
```

Display a skeleton of your router configuration:

```
[edit]
user@host # show | match {
system {
    root-authentication {
    name-server {
    login {
        class superuser {
        user junipero {
            authentication {
    services {
    syslog {
        file messages {
    processes {
chassis {
    alarm {
        sonet {
    images {
        scb {
        fpc {
interfaces {
    at-2/1/1 {
        atm-options {
        unit 0 {
    at-2/2/0 {
    ...
snmp {
    community public {
        clients {
routing-options {
    static {
        route 0.0.0.0/0 {
        route 192.168.0.0/16 {
        route 208.197.169.0/24 {
protocols {
    rsvp {
        interface so-5/1/0 {
    mpls {
        interface so-5/1/0 {
    bgp {
        group internal {
    ospf {
        area 0.0.0.0 {
            interface so-5/1/0 {
```

List all users who are logged into the router except for the user “root”:

```
user@host> show system users | except root
 8:28PM  up 1 day, 13:59, 2 users, load averages: 0.01, 0.01, 0.00
USER     TTY FROM              LOGIN@  IDLE WHAT
sheep    p0  baa.juniper.net   7:25PM     - cli
```

Save the configuration, except for encrypted passwords, to a file:

```
user@host> show configuration | except SECRET-DATA | save my.output.file
```

Display the output, starting not at the beginning but rather at the first occurrence of text matching a regular expression, using the find command after the pipe:

```
user@host> command | find regular-expression
```

If the regular expression contains spaces, operators, or wildcard characters, enclose the expression in quotation marks.

List the routes in the routing table starting at 208.197.169.0:

```
user@host> show route | find 208.197.169.0
208.197.169.0/24   *[Static/5] 1d 13:22:11
                    > to 192.168.4.254 via so-3/0/0.0
224.0.0.5/32       *[OSPF/10] 1d 13:22:12, metric 1

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

47.0005.80ff.f800.0000.0108.0001.1921.6800.4015.00/160
                   *[Direct/0] 1d 13:22:12
                    > via lo0.0
```

Count the Number of Lines in the Output

To count the number of lines in the output, specify the count command after the pipe:

```
user@host> command | count
```

For example:

```
user@host> show configuration | count
Count: 269 lines
user@host> show route | count
Count: 67 lines
```

Display All Output at Once

To display the output all at once instead of one screen at a time, specify the no-more command after the pipe. This command is equivalent to the set cli screen-length 0 command, but affects the output of the one command only.

```
user@host> command | no-more
```

Retain the Output after the Last Screen

When you view output one screen at a time, you typically return to the CLI prompt after viewing the last screen.

To not return immediately, use the hold command after the pipe. This feature is useful, for example, when you want to scroll or search through the output.

```
user@host> command | hold
```

Filter Command Output Multiple Times

For the output of a single command, you can redirect the output one or more times. For example:

```
user@host> command | match regular-expression | except regular-expression |
match other-regular-expression | find regular-expression | hold
```

Control the CLI Environment

To configure the CLI environment, use the CLI operational set command:

```
user@host> set cli ?
Possible completions:
  complete-on-space    Toggle word completion on space
  idle-timeout         Set the cli maximum idle time
  prompt               Set the cli command prompt string
  restart-on-upgrade   Set cli to prompt for restart after a software
                        upgrade
  screen-length        Set number of lines on screen
  screen-width         Set number of characters on a line
  terminal             Set terminal type
```

When you log in to the router using ssh, or log in from the console when its terminal type has already been configured, your terminal's type, screen length, and screen width are already set, so you do not need to change them from the CLI.

Set the Terminal Type

To set the terminal type, use the set cli terminal command:

```
user@host> set cli terminal terminal-type
```

The *terminal-type* can be one of the following: ansi, vt100, small-xterm, xterm.

Set the Screen Length

The default CLI screen length is 24 lines. To change the length, use the set cli screen-length command:

```
user@host> set cli screen-length length
```

Setting the screen length to 0 lines disables the display of output one screen at a time. Disabling this UNIX more-type interface can be useful when you are issuing CLI commands from scripts.

Set the Screen Width

The default CLI screen width is 80 columns. To change the length, use the set cli screen-width command:

```
user@host> set cli screen-width width
```

Set the CLI Prompt

The default CLI prompt is *user@host>*. To change this, use the set cli prompt command. If the prompt string contains spaces, enclose the string in quotation marks.

```
user@host> set cli prompt string
```

Idle Timeout

By default, an individual CLI session never times out, unless the idle-timeout statement has been included in the user's login class configuration. To set the maximum time an individual session can be idle before the user is logged off the router, use the set cli idle-timeout command:

```
user@host> set cli idle-timeout timeout
```

timeout can be 0 to 100,000 minutes. Setting *timeout* to 0 disables the timeout.

Set CLI to Prompt after a Software Upgrade

By default, the CLI prompts you to restart after a software upgrade. To disable the prompt for an individual session, use the set cli restart-on-upgrade off command:

```
user@host> set cli restart-on-upgrade off
```

To re-enable the prompt, use the set cli restart-on-upgrade on command:

```
user@host> set cli restart-on-upgrade on
```

Set Command Completion

By default, you can type a space or tab to have the CLI complete a command. To have the CLI allow only a tab to complete a command, use the set cli complete-on-space command:

```
user@host> set cli complete-on-space off
Disabling complete-on-space
user@host>
```

To re-enable the use of both space and tab characters for command completion, use the set cli complete-on-space on command:

```
user@host> set cli complete-on-space on
Enabling complete-on-space
user@host>
```

Display CLI Settings

To display the current CLI settings, use the show cli command:

```
user@host> show cli
CLI complete-on-space set to on
CLI idle-timeout disabled
CLI restart-on-upgrade set to on
CLI screen-length set to 24
CLI screen-width set to 80
CLI terminal is 'ansi'
```

Example: Control the CLI Environment

The following example shows how to change the default CLI environment:

```
user@host> set cli screen-length 66
Screen length set to 66
user@host> set cli screen-width 40
Screen width set to 40
user@host> set cli prompt “router1-san-jose > “
router1-san-jose > show cli
CLI screen length set to 66
CLI screen width set to 40
router1-san-jose >
```

Set the Current Date and Time

To set the current date and time on the router, use the set date command:

```
user@host> set date YYYYMMDDhhmm.ss
```

YYYY is the four-digit year, *MM* is the two-digit month, *DD* is the two-digit date, *hh* is the two-digit hour, *mm* is the two-digit minute, and *ss* is the two-digit second. At a minimum, you must specify the two-digit minute. All other parts of the date and time are optional.

For more information, see the *JUNOS Internet Software Configur ation Guide: Getting Started*.

Set the Current Date and Time from NTP Servers

To synchronize the current date and time on the router to NTP servers, use the set date ntp command:

```
user@host> set date ntp <ntp-server>
```

You do not need to reboot the router when you use the set date ntp command. If you do not specify any NTP servers, the JUNOS software will use the ones configured at the [edit system ntp server] hierarchy level.

For more information, see the *JUNOS Internet Software Configur ation Guide: Getting Started*.

Display CLI Command History

You can display a list of recent commands that you issued. To display the command history, use the show cli history command:

```
user@host> show cli history
  03-03 01:00:50 -- show cli history
  03-03 01:01:12 -- show interfaces terse
  03-03 01:01:22 -- show interfaces lo0
  03-03 01:01:44 -- show bgp next-hop-database
  03-03 01:01:51 -- show cli history
```

By default, this command displays the last 100 commands issued in the CLI. If you specify a number with the command, it displays that number of recent commands. For example:

```
user@host> show cli history 3
  01:01:44 -- show bgp next-hop-database
  01:01:51 -- show cli history
  01:02:51 -- show cli history 3
```

Monitor Who Uses the CLI

Depending upon how you configure the JUNOS software, multiple users can log into the router, use the CLI, and configure or modify the software configuration.

The JUNOS software provides a general syslog-like mechanism to log system operations, such as when users log into the router and when they issue CLI commands. To configure system logging, include the syslog statement in the configuration, as described in the *JUNOS Internet Softw are Configur ation Guide: Getting St arted*.

If another user is in configuration mode when you enter configuration mode, a notification message is displayed that indicates who the user is and what portion of the configuration they are viewing or editing:

```
user@host> configure
Entering configuration mode
Current configuration users:
  root terminal p3 (pid 1088) on since 1999-05-13 01:03:27 EDT
    [edit interfaces fxp0 unit 0 family inet]
The configuration has been changed but not committed
```

Summary of CLI Operational Commands

The following sections explain each of the top-level CLI commands. The commands are organized alphabetically.

clear

Syntax clear (arp | bgp | chassis | firewall | igmp | ilmi | interfaces | isis | ldp | log | mpls | msdp | multicast | ospf | pim | rip | route | rsvp | snmp | system | vrrp)

Description Delete or zero information from various router and protocol databases.

Usage Guidelines The various clear commands are discussed in other chapters. To locate these commands, refer to the table of contents or the index.

Required Privilege Level clear

configure

Syntax configure

Description Enter configuration mode.

Usage Guidelines See the *JUNOS Internet Softw are Configur ation Guide: Getting St arted*.

Required Privilege Level configure

file

Syntax file (copy | delete | list | rename | show)

Description Copy files to and from the router.

Usage Guidelines See the *JUNOS Internet Softw are Configur ation Guide: Getting St arted*.

Required Privilege Level maintenance

help

Syntax help (reference | topic)

Description Display help information about available operational commands and configuration statements.

Usage Guidelines See the *JUNOS Internet Softw are Configur ation Guide: Getting St arted*.

Required Privilege Level view

monitor

Syntax monitor (start | stop | list) <interface > <traffic>

Description Monitor a log file or interface statistics or traffic in real time.

Usage Guidelines See "Monitor and Perform System Management Functions" on page 41, "Real-Time Router Interface Monitoring and Troubleshooting" on page 445, and monitor traffic on page 452.

Required Privilege Level Depends on the specific command.

mtrace

Syntax mtrace (from-source | to-gateway | monitor)

Description Display trace information about a multicast path from a source to a receiver.

Usage Guidelines See "IP Multicast Monitoring and Troubleshooting" on page 639.

Required privilege level view

ping

Syntax ping

Description Check the reachability of network hosts.

Usage Guidelines See "Monitor and Perform System Management Functions" on page 41.

Required Privilege Level network

quit

Syntax quit

Description Exit from the CLI to a UNIX shell.

Required Privilege Level shell and maintenance

See Also start on page 24

| *(pipe)*

Syntax | (compare | count | display <detail | inheritance | xml> | except *pattern* | find *pattern* | hold | match *pattern* | no-more | resolve <full-names> | save *filename* | trim *columns*)

Description Filter the output of an operational mode or a configuration mode command.

Options compare (filename | rollback n)—(Configuration mode only, with the show command only) Compare configuration changes with another configuration file.

count—Display the number of lines in the output.

display—Display additional information about the contents of the configuration.

detail—(Configuration mode only) Display configuration data detail.

inheritance—(Configuration mode only) Display inherited configuration data and source group.

xml—(Operational mode only) Display XML content of the command.

except *pattern*—Ignore text matching a regular expression when searching the output. If the regular expression contains spaces, operators, or wildcard characters, enclose it in quotation marks.

find *pattern*—Display the output starting at the first occurrence of text matching a regular expression. If the regular expression contains spaces, operators, or wildcard characters, enclose it in quotation marks.

hold—Hold text without exiting the --More-- prompt.

match *pattern*—Search for text matching a regular expression. If the regular expression contains spaces, operators, or wildcard characters, enclose it in quotation marks.

no-more—Display output all at once rather than one screen at a time.

resolve—Convert IP addresses into DNS names. Truncates to fit original size unless full-names specified. To prevent the names from being truncated, use the full-name option.

save *filename*—Save the output to a file or URL. For information about specifying the filename, see “Search for a String in the Output” on page 13.

trim *columns*—Trim specified number of columns from the start line.

Usage Guidelines See “Filter Command Output” on page 12.

request

Syntax request system (reboot | halt | software | snapshot)

Description Stop or reboot the router, load software packages, and back up the router’s file systems.

Usage Guidelines See “Monitor and Perform System Management Functions” on page 41.

Required Privilege Level maintenance

restart

Syntax restart (fpc | interface-control | mib-process | routing | sampling | sfm | snmp | soft)

Description Restart router software processes.

Usage Guidelines See “Monitor and Perform System Management Functions” on page 41.

Required Privilege Level reset

set

Syntax set (chassis | cli | date | date ntp)

Description Configure CLI properties and the router’s date and time.

Usage Guidelines See “Control the CLI Environment” on page 16, “Set the Current Date and Time” on page 18, and “Set the Current Date and Time from NTP Servers” on page 18.

Required Privilege Level view

show

Syntax show (aps | arp | as-path | bgp | chassis | cli | configuration | connections | dvmrp | firewall | host | igmp | interfaces | isis | ldp | log | mpls | msdp | multicast | ntp | ospf | pfe | pim | policy | rip | route | rsvp | sap | snmp | system | task | ted | version | vrrp)

Description Show information about all aspects of the software, including interfaces and the routing protocols.

Usage Guidelines The various show commands are discussed on other chapters. To locate these commands, refer to the table of contents or the index.

Required Privilege Level Depends on the specific command.

ssh

Syntax ssh

Description Open a secure shell to another host.

Usage Guidelines See “Monitor and Perform System Management Functions” on page 41.

Required Privilege Level network

start

Syntax start shell

Description Start a UNIX shell on the router.

Usage Guidelines See “Monitor and Perform System Management Functions” on page 41.

Required Privilege Level shell and maintenance

telnet

Syntax telnet

Description Establish a telnet session to another host.

Usage Guidelines See “Monitor and Perform System Management Functions” on page 41.

Required Privilege Level network

test

Syntax test (configuration | interface | msdp | policy)

Description Run various diagnostic debugging commands.

Usage Guidelines The various test commands are discussed in other chapters. To locate these commands, refer to the table of contents or the index.

Required Privilege Level Depends on the specific command.

traceroute

Syntax traceroute

Description Trace the route to a remote host.

Usage Guidelines See “Monitor and Perform System Management Functions” on page 41.

Required Privilege Level network

Summary of CLI Environment Commands

The following sections explain each of the CLI environment commands. The commands are organized alphabetically.

set cli complete-on-space

Syntax set cli complete-on-space (on | off);

Description Configure the keys to use for command completion.

Default When you type a space or tab, the CLI performs command completion.

Options on—Allow both a space and a tab to be used for command completion.

off—Allow only a tab to be used for command completion.

Usage Guidelines See "Set Command Completion" on page 17.

Required Privilege Level view

Sample Output

```
user@host> set cli com<Space>
user@host> set cli complete-on-space off
user@host> set cli com<Tab>
user@host> set cli complete-on-space on
user@host>
```

set cli idle-timeout

Syntax set cli idle-timeout *timeout*

Description Set the maximum time that an individual session can be idle before the user is logged off the router. The session times out after remaining at the CLI operational mode prompt for the specified time. The session can time out while monitoring log files.

Default If you do not issue this command, and the user's login class does not specify this value, the user is never forced off the system after extended idle times.

Options *timeout*—Maximum idle time, in minutes
Range: 0 through 100,000 minutes. Setting it to 0 disables the timeout.

Usage Guidelines See the *JUNOS Internet Softw are Configur ation Guide: Getting St arted*.

Required Privilege Level view

set cli prompt

Syntax set cli prompt *string*

Description Set the prompt to display within the CLI.

Default *user@host>*

Options *string*—CLI prompt. To include spaces in the prompt, enclose the string in quotation marks.

Usage Guidelines See “Set the CLI Prompt” on page 17.

Required Privilege Level view

Sample Output
```
user@host> set cli prompt “cli% “
cli%
```

set cli restart-on-upgrade

Syntax set cli restart-on-upgrade (off | on)

Description For an individual session, set the CLI to prompt you to restart the router after upgrading the software.

Default The CLI prompts you to restart, unless the screen length has been set to 0.

Options off—Disables the prompt.

on—Enables the prompt.

Usage Guidelines See the *JUNOS Internet Software Configuration Guide: Getting Started*.

Required Privilege Level view

set cli screen-length

Syntax set cli screen-length *length*

Description Set the number of lines of text that the screen can display.

Options *length*—Number of lines on the screen.
Range: 0 through 100,000
Default: 24 lines

Usage Guidelines See “Set the Screen Length” on page 16.

Required Privilege Level view

Sample Output
```
user@host> set cli screen-length 66
Screen length is set to 66
user@host>
```

set cli screen-width

Syntax set cli screen-width *width*

Description Set the number of characters that the screen can display on a single line.

Options *width*—Number of columns on the screen.
Range: 0 through 100,000
Default: 80 columns

Usage Guidelines See "Set the Screen Width" on page 16.

Required Privilege Level view

Sample Output
```
user@host> set cli screen-width 40
Screen width set to 40
user@host>
```

set cli terminal

Syntax set cli terminal *terminal-type*

Description Set the terminal type.

Options *terminal-type*—Type of terminal that is connected to the port.
Values: ansi, vt100, small-xterm, xterm
Default: The terminal type is unknown, and the user is prompted for the terminal type.

Usage Guidelines See "Set the Terminal Type" on page 16.

Required Privilege Level view

set date

Syntax set date *YYYYMMDDhhmm.ss*

Description Set the current date and time on the router.

Options *YYYYMMDDhhmm.ss*—Date and time to set. *YYYY* is the four-digit year, *MM* is the two-digit month, *DD* is the two-digit date, *hh* is the two-digit hour, *mm* is the two-digit minute, and *ss* is the two-digit second. At a minimum, you must specify the two-digit minute. All other parts of the date and time are optional.

Usage Guidelines See the *JUNOS Internet Software Configuration Guide: Getting Started*.

Required Privilege Level view

set date ntp

Syntax set date ntp <*ntp-server*>

Description Use an NTP server to synchronize the current date and time setting on the router.

You do not need to reboot the router when you use the set date ntp command.

Options none—Uses the system NTP server list.

ntp-server—IP address of one or more NTP servers to query. When querying more than one server, use the format "*ip-address ip-address*" (for example, "1.2.3.4 192.17.22.9").

Required Privilege Level view

Usage Guidelines See the *JUNOS Internet Software Configuration Guide: Getting Started*.

Sample Output: set date ntp (to query one server)

```
user@host> set date ntp 192.17.12.9
14 Sep 22:00:50 ntpdate[20603]: step time server 192.17.12.9 offset 0.000461 sec
```

Sample Output: set date ntp (to query two servers)

```
user@host> set date ntp "200.49.40.1 129.127.28.4"
10 Feb 13:50:21 ntpdate[794]: step time server 129.127.28.4 offset 0.000163 sec
```

show cli

Syntax show cli

Description Display information about how the CLI environment is configured.

Required Privilege Level view

Usage Guidelines See "Control the CLI Environment" on page 16.

Sample Output

```
user@host> show cli
CLI screen length set to 60
CLI screen width set to 80
CLI complete-on-space set to on
user@host>
```

show cli history

Syntax show cli history <*count*>

Description List recent commands that you issued in the CLI and the time they were issued.

If you issue the run show cli history command from configuration mode, the command lists the most recent configuration mode commands that you issued and the time they were issued.

Options *count*—(Optional) Number of recent commands to display.
Range: 0 through 65,535
Default: 100 (20 if your screen length is set to 0)

Usage Guidelines See "Display CLI Command History" on page 19.

Required Privilege Level view

Sample Output

```
user@host> show cli history
  12:33:39 -- configure
  12:42:52 -- show cli history
  12:43:02 -- show interfaces terse
  12:43:14 -- show interfaces lo0
  12:43:20 -- show bgp
  12:43:28 -- show bgp next-hop-database
  12:43:32 -- show cli history
user@host> configure
...
[edit]
user@host# run show cli history
  12:40:08 -- show
  12:40:17 -- edit protocols
  12:40:27 -- set isis
  12:40:29 -- edit isis
  12:40:40 -- run show cli history
[edit protocols isis]
user@host#
```